



MARINER

100% AUTOMATED, REAL-TIME INDUSTRIAL INSPECTION

SPYGLASS VISUAL INSPECTION

Reducing Manufacturer's Cost of Quality

THE PROBLEM

MANUFACTURERS SPEND
AS MUCH AS 30% OF
THEIR ANNUAL REVENUE
PRODUCING DEFECTIVE
PRODUCTS – *QUALITY DIGEST*

MARINER



3 REASONS TO BRING AI TO YOUR FACTORY FLOOR



INDUSTRY 4.0

Many manufacturers are hungry to adopt IoT & machine learning as a portion of their Industry 4.0 transformation. Those who do will outperform those who don't.



68% TOP PRIORITY

In a recent McKinsey survey, 68% of manufacturers report that incorporating Industry 4.0 technology, specifically AI, is their top priority – which leaves 32% of companies at risk of being left behind.



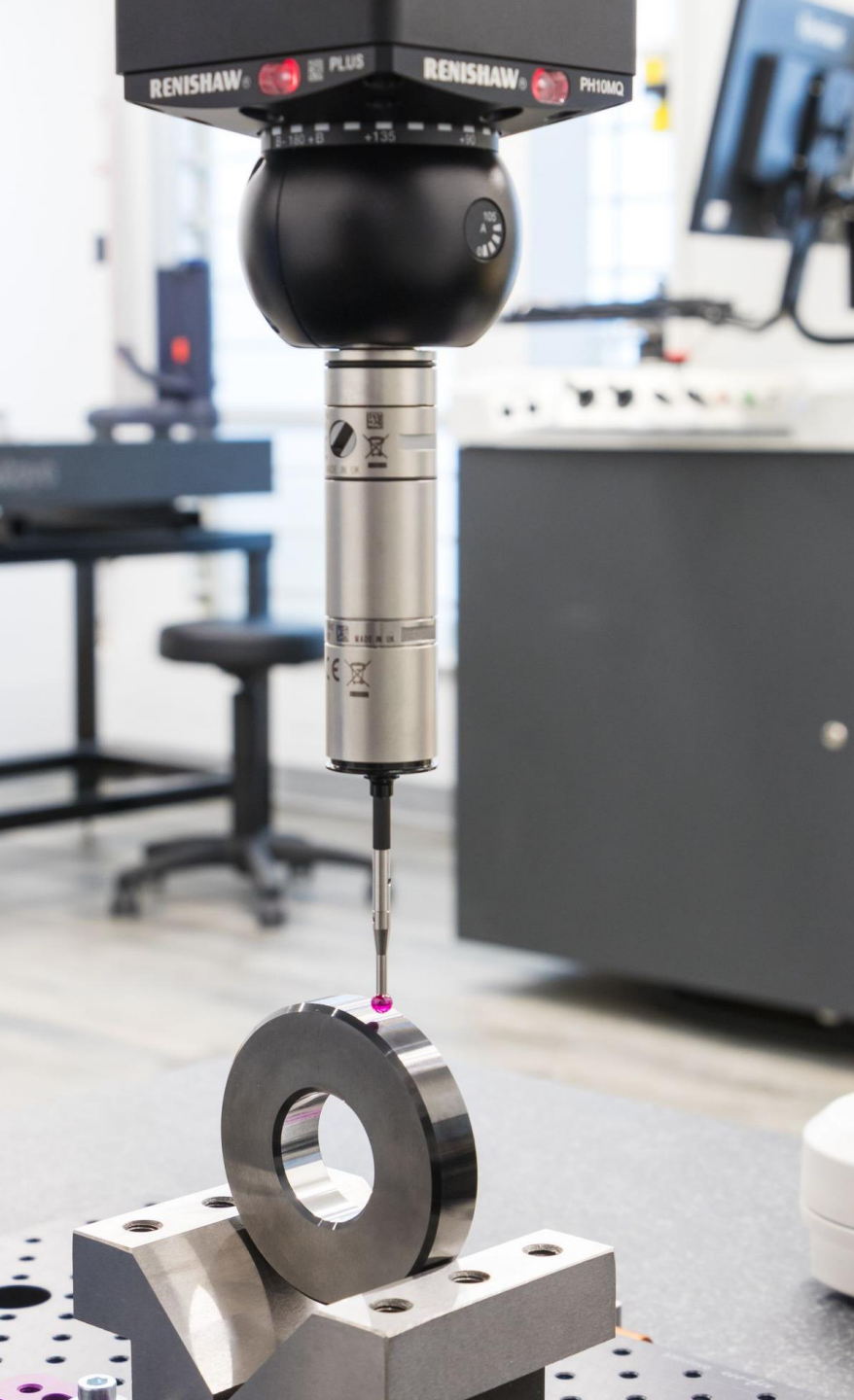
72% NOT AT SCALE YET

Only 28% of manufacturers have implemented Industry 4.0 at scale, while 42% are conducting PoCs & pilots. Again, 30% have yet to begin the journey and risk being left behind.

“ By employing advanced image recognition techniques for visual inspection and fault detection, productivity increases of up to 50% are possible.

Specifically, AI-based visual inspection that's based on image recognition may increase defect detection rates by up to 90% as compared to human inspection.

”



SPYGLASS VISUAL INSPECTION

A subscription based product that reduces manufacturers' cost of quality
by leveraging Deep Learning, IoT, and the Cloud
to automate defect detection & classification in real-time

- Reduces false calls
- Eliminates human inspection
- Improves throughput
- Reduces defects

SPYGLASS VISUAL INSPECTION BENEFITS



Improved Customer Satisfaction

SVI uses Deep Learning to significantly reduce escapes. It inspects your products more accurately than your best inspector on their best day, every day.



Reduce Defects via Classification

Once trained, SVI can accurately classify defects by as many categories as needed. Analytics are provided in dashboards and reports to assist in the Root Cause Analysis process.



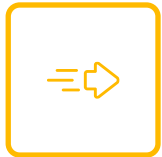
Reduced Labor Costs

SVI accuracy practically eliminates the need for human inspection. You will save an enormous amount in labor costs and can re-purpose inspectors for more valuable tasks, such as inspecting lines without SVI.



Reduce Defects via Alerting

SVI supports the creation of rules. When a rule is triggered, factory personnel are alerted -- for example, if defect frequency exceeds an upper threshold. Alerts can take the form of emails, text messages, and lights, etc.



Increased Revenue

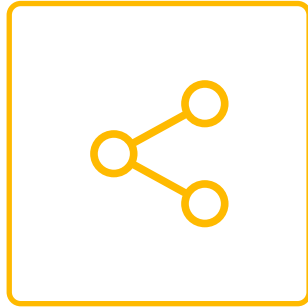
In many manufacturing scenarios, equipment is operated at slower speeds to permit human inspection, re-inspection, or oversight. Eliminating human inspection removes this constraint allowing for increased throughput.



Reduce Defects by Correlation

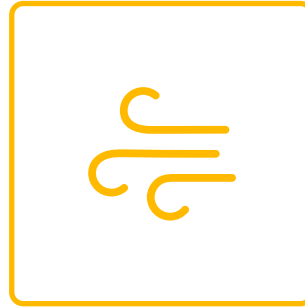
SVI can capture production line telemetry and correlate quality to operational conditions steering operators toward better performance.

DEEP LEARNING IS HOW WE DETECT DEFECTS



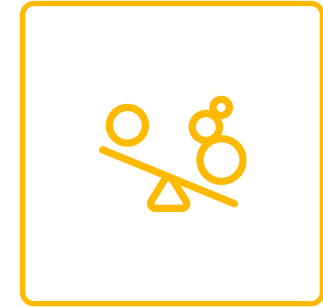
ResNet Algorithm

Residual Neural Network (ResNet) classifies and localizes defects in images and leverages the strengths of each approach to improve overall performance, while giving end-users fine-grain control over decisions based on Deep Learning model results



Unique Training Pipeline

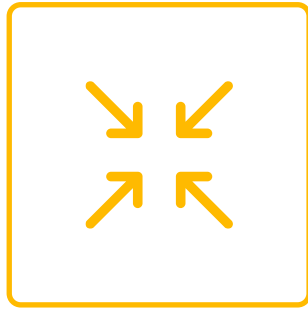
Spyglass Visual Inspection includes a unique automated training pipeline which includes Hyper Parameter Optimization Pipeline dramatically reducing vision modeling time



Dynamic Class Re-Balancing

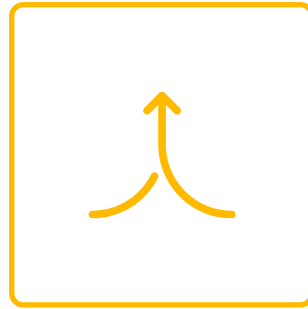
Spyglass Visual Inspection's training pipeline leverages a unique dynamic class re-balancing procedure to address extreme class imbalance that is common to manufacturing datasets

THE CLOUD IS HOW WE ELIMINATE DEFECTS



Centralized Management

SVI leverages the Cloud to support centralized management to provide enterprise-class scalability and lower the cost and responsiveness of support.



Real-time Telemetry Correlation

SVI is the only visual inspection solution that supports the collection of production line telemetry from which to correlate with quality and suggest improvements in real-time.



Rules Engine for Alerting

SVI includes a rules-engine to allow customers to monitor for emergent conditions and alert factory personnel in real-time.

AUTOMOTIVE GLASS CASE STUDY

● The Client

Global glass manufacturer with a large automotive glass business in the Americas and Europe

● The Problem

Our customer had a 25% false reject rate with their existing machine vision system. Human oversight of existing machine vision system required slowing production lines by 15% - 20%.

● The Result

- Earning ~\$4m in ROI annually
- Reduced false reject rate to <1%
- Operate production lines at 100% speeds
- Rolling out to factories in Ohio, North Carolina, and Poland



AUTOMOTIVE FABRIC CASE STUDY

● The Client

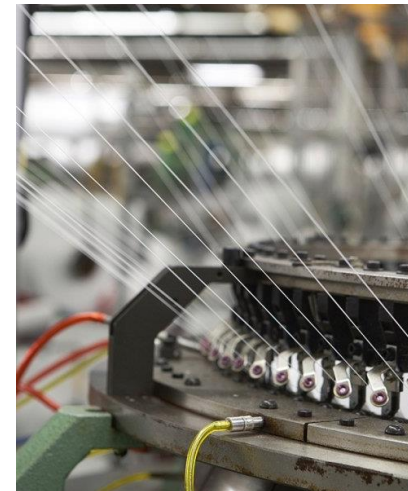
Global manufacturer of automotive fabric that provides body cloth and headliner to major OEMs worldwide

● The Problem

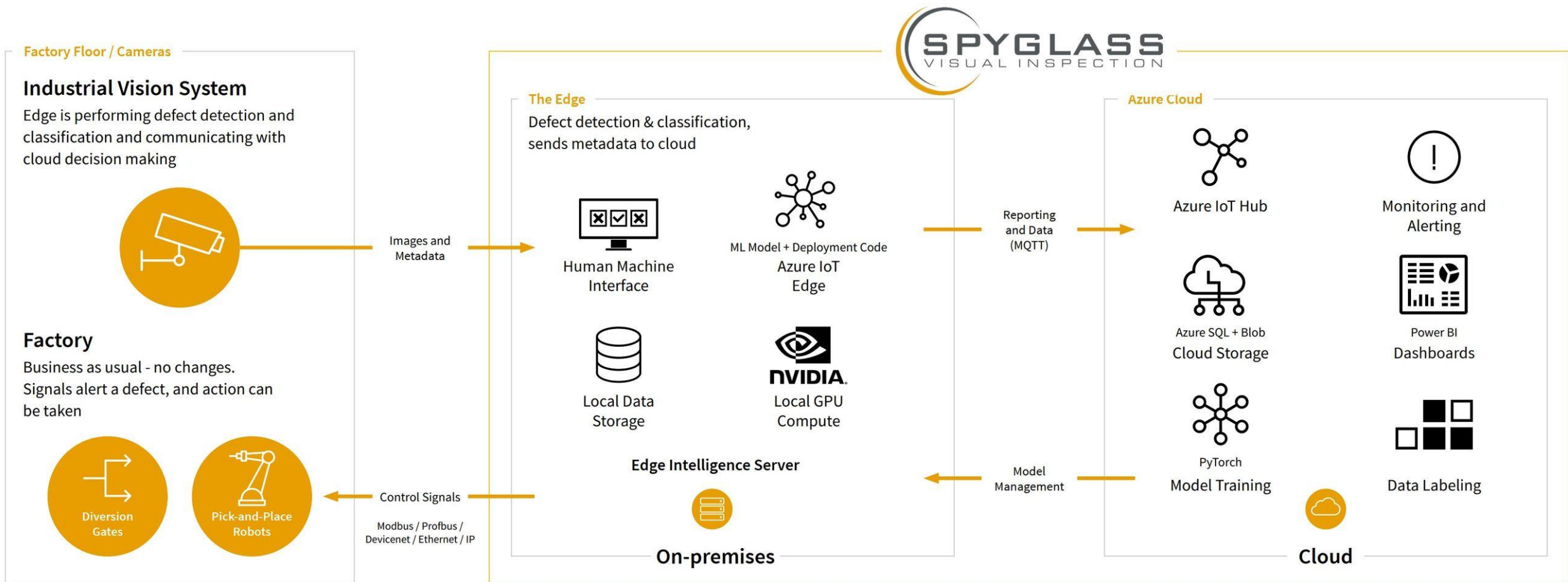
34% false reject rate with their existing machine vision system. Human oversight of these systems required a significant investment in labor for inspection and re-inspection to reclaim rejected fabric

● The Result

- Earning ~\$2m in ROI annually
- Reduced false reject rate to <2%
- Operate without human inspection
- Rolling out to more factories



HOW SVI DELIVERS VALUE



SPYGLASS VISUAL INSPECTION

In Factory Application

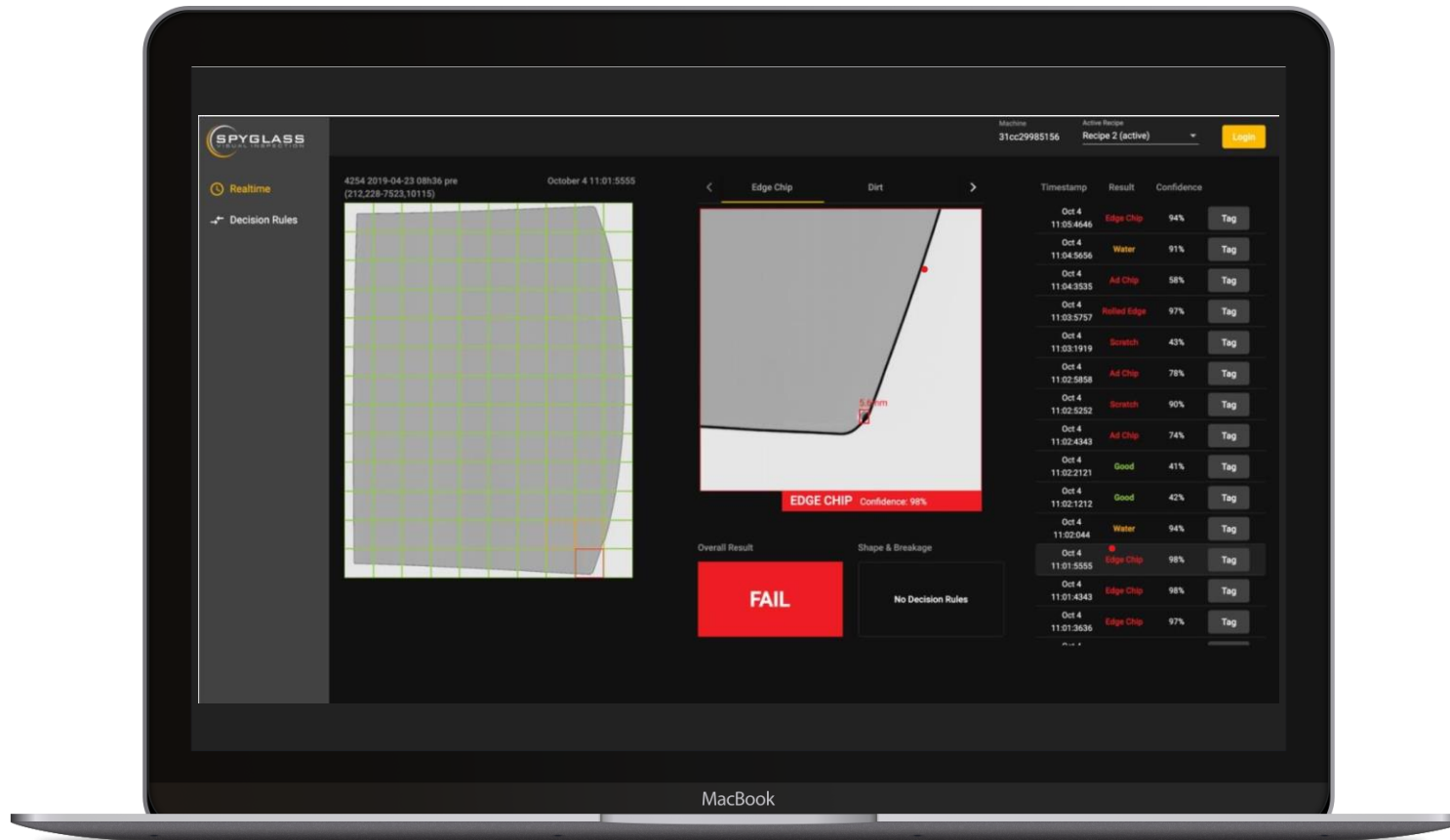


Image Being Inspected

An image of the product being inspected and a magnified image with a magnified image of the highest confidence defect



Pass or Fail

Whether the product was deemed to be of acceptable quality or not



Tag Button

SVI gets better over time by learning from its mistakes. If SVI has misclassified a part, the operator can click the tag button and correct the label



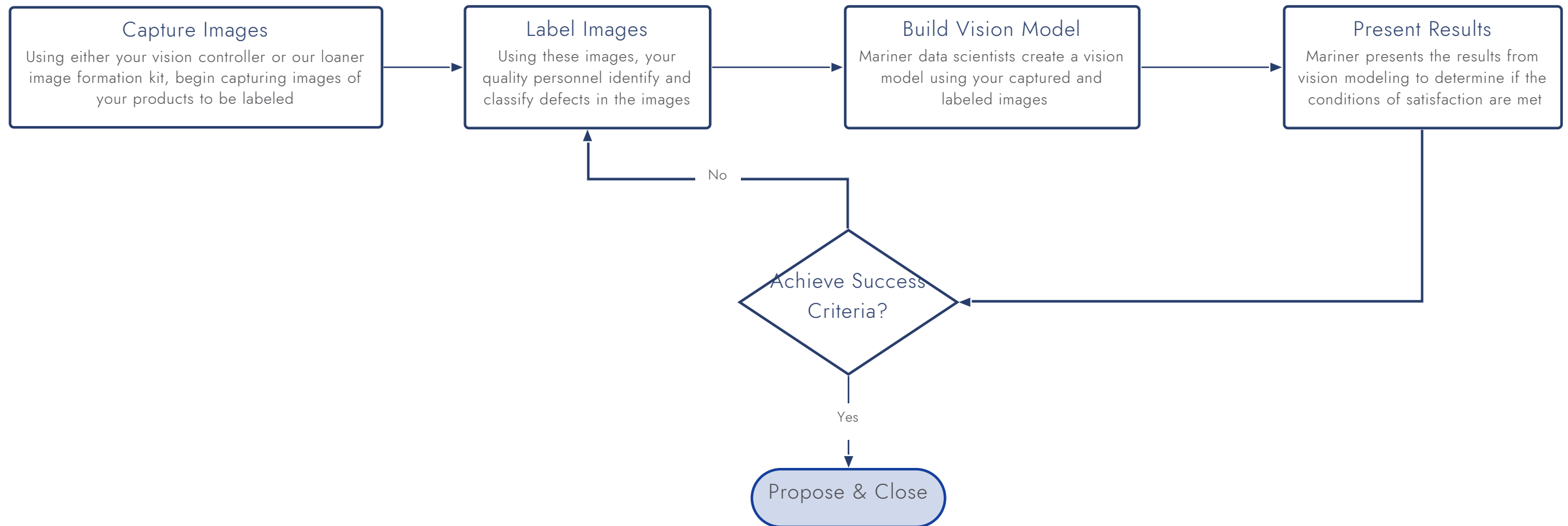
DEMO

Spyglass Visual Inspection In-Factory App

HOW TO GET STARTED

RISK-FREE 30-DAY PROOF OF VALUE ENGAGEMENT

Prerequisite: Verification of Significant Business Impact with Business Decision Maker





LET'S GET STARTED

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